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BEFORE THE ARIZONA CORPORATION COMMISSION

RENZ D. JENNINGS
CHAIRMAN
MARCIA WEEKS
COMMISSIONER
CARL J. KUNASEK
COMMISSIONER

IN THE MATTER OF THE COMPETITION IN THE PROVISION OF ELECTRIC SERVICES THROUGHOUT THE STATE OF ARIZONA.	DOCKET NO. U-0000-94-165 **NOTICE OF FILING**

Staff hereby files its Draft Summary of the Working Group Meetings of February 28, 1995, March 3, 1995 and March 8, 1995, and Agendas for the Task Force meetings in the above-captioned docket.

DATED THIS 24th DAY OF MARCH, 1995.

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MEMORANDUM

TO: Parties to Retail Electric Competition Docket
(Docket No. U-0000-94-165)

FROM: David Berry
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DATE: March 22, 1995

RE: TASK FORCE REPORTS

Enclosed are draft summaries of the three Task Force meetings of the Working Group on Retail Electric Competition. The Task Forces met on February 28, March 3, and March 8, 1995 in the Commission Hearing Room.

The Systems and Markets Task Force has scheduled its next meeting for April 3 at Arizona Public Service Company, 400 North 5th Street in Phoenix. (Visitors to APS must obtain a pass in the lobby when entering the building). An agenda for the meeting is enclosed. If you are attending the Systems and Markets Task Force meeting on April 3, please review the "assignment" tables and fill them in ahead of time, if possible.

The Energy Efficiency & Environment Task Force and the Regulatory Task Force have not yet scheduled their next meetings; the next meetings may be held in May. The Legal Subcommittee of the Regulatory Task Force tentatively set its first meeting for March 29, 1995. Please call Janice Alward or Peter Breen at (602) 542-3402 for more information about the Legal Subcommittee.

The Staff coordinators for the Task Forces are:

- Regulatory Task Force -- David Berry (602) 542-0742
- Regulatory Task Force Legal Committee -- Janice Alward (602) 542-3402
- Energy Efficiency & Environment Task Force -- Ray Williamson (602) 542-0828
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Finally, each Task Force reviewed the options which the Commission might consider. The accompanying table presents the latest version of those options.

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REVISED OPTIONS
February 28, 1995 & March 7, 1995

- **Allow Limited Competition in Generation and Some Consumer Services***
  - ☺ **Within Specified Time Period**
  - ☺ **Within Specified MW Limit**
  - ☺ **Within Specified Area**
  - ☺ **For Specified Types of Consumers**
  - ☺ **For Specified Activities (e.g. sale of power and energy, sale of voltage support)**
  - ☺ **For regulated services (only):**
    - ○ **Allow Pricing Flexibility/Special Contracts**
    - ○ **Unbundle Services**
    - ○ **Encourage More Wholesale Competition**
      - ◆ **Possibly Require or Encourage Utilities to Spin Off Transmission and Generation Assets**
    - ○ **Provide Incentives to Utilities to Lower Costs (e.g. Performance Based Rate Making)**
    - ○ **Maintain Status Quo**
- **Encourage Competition in Generation and Some Consumer Services***
  - ☺ **Possibly Require or Encourage Utilities to Spin Off Transmission and Generation Assets**
  - ☺ **Encourage Competition Immediately**
  - ☺ **Encourage Competition Slowly and Develop Transition to Full Competition (see limited competition above)**
    - ○ **If Limited Competition Is Successful, Move Toward Unlimited Competition**
- **Encourage Efficiency but Discourage Retail Wheeling**
  - ☺ **Allow Pricing Flexibility/Special Contracts**
  - ☺ **Unbundle Services**
  - ☺ **Encourage More Wholesale Generation Competition**
    - ○ **Possibly Require or Encourage Utilities to Spin Off Transmission and Generation Assets**
  - ☺ **Provide Incentives to Utilities to Lower Costs (e.g. Performance Based Rate Making)**
  - ☺ **Maintain Status Quo**
- **Take Into Account Effects of Restructuring in Other Jurisdictions**

* It is assumed that Distribution and Transmission are likely to remain monopoly services and therefore to remain under some regulation.

DSM ISSUES

DSM AS A RESOURCE: Why do DSM?

- DSM is a substitute for generation, transmission, or distribution resources and it may be less costly to society than generation, transmission, or distribution facilities
- participants may value DSM because it lowers their energy bills
- providers may value DSM because it is profitable
- utilities may value DSM because it is a less costly resource than new generation, transmission, or distribution facilities
- DSM is decreasing in value as the marginal cost of electricity (and gas) declines and as electricity (and gas) prices decline
- DSM can be a *long term* resource
- DSM may be viewed as a social program that is not cost effective, such as some low income DSM programs
- DSM can serve as an environmental resource because it may reduce pollution associated with power production

RESPONSIBILITY FOR PROVIDING DSM: Who promotes DSM?

- utilities
- society in general (through legislation, for example) through building codes, appliance standards, etc. to promote market transformation
- a government agency (or "conservation utility") via a tax on electricity production or consumption
- Energy Service Companies (ESCOs)

PRICING OF DSM: Who pays, how much, how?

- to what extent should participants (alone) be responsible for paying for DSM in order to be fair and efficient?
- will non-participants balk at paying for others' DSM in a competitive environment? in a regulated monopoly environment?
- should the "rates" for DSM be regulated?
- will DSM be billed as a separate (unbundled) service?

IMPLEMENTATION OF DSM

- do utilities have an advantage in DSM because of their access to customer records?
- should utility customer data be made available to ESCOs? are such data confidential?

- will out-of-state suppliers of electricity be subject to Arizona's rules on DSM?
- will a third party ("conservation utility") be responsible for collecting DSM funds from a tax on electricity production or consumption?
- DSM may become more customized rather than provide generic solutions for a large group of consumers
- industrial customers want choice: they may buy DSM in either packages or pieces
- implement DSM through a voluntary or mandatory DSM savings account (paid as part of the utility bill) in which some or all consumers would pay into an account and could withdraw the money (perhaps with interest) for approved DSM programs; a consumer could only withdraw money from his or her own account -- no cross subsidization
- there should be a level playing field for all competitors
- some ways that DSM might be handled in a competitive environment:
  - **Totally** unregulated (sold on its own merits)
  - A separate government agency implements DSM
  - A quasi-governmental agency collects funds for DSM, but private sector implements the DSM programs
  - Three types of DSM programs:
    - Cost-effective DSM: done by private, non-regulated entity
    - Socially desired DSM (long payback, hard to measure): funded by tax revenues, etc.
    - Customer retention or attraction DSM programs: could be funded by economic development funds

TRANSACTION COSTS OF PARTICIPATING IN DSM MARKETS

- if transaction costs are high and utilities do not provide DSM, DSM is likely to diminish greatly and energy inefficiency will increase
- transaction costs are decreasing for some commercial and industrial customers because trade allies are stocking more energy efficient equipment
- some large consumers undertake systematic reviews of DSM and follow through if DSM is competitive with other organizational objectives & projects
- there is a potential risk to utility or ESCO from customers not fulfilling terms of contract
- contracts with variable DSM costs (depending on value of DSM and energy savings) may be unattractive to either a buyer or seller of DSM services

MARKETING OF DSM IN A COMPETITIVE ENVIRONMENT

- DSM could become a customer-driven service
- DSM could be marketed as an energy service by utilities
- DSM equipment manufacturers may promote DSM with or without utility programs
- DSM could be offered to attract or retain customers
- DSM could be marketed as a service that consumers value
- DSM could be marketed to promote an energy efficient society (perhaps linked to energy standards and codes)
- DSM could be offered as an unbundled service (which consumers would then be responsible for bundling with other services), or as part of a package of services (which could include kilowatt hours of electricity)
- selection of DSM services depends on relative importance of demand (kW) and energy (kWh) costs paid by consumer
- many consumers may take a short run view of DSM (manifested in a requirement for very rapid payback)

DSM AS A BUSINESS STRATEGY

- entities engaged in generation, transmission, or distribution of electricity may have little interest in DSM because their profits are linked only to the volume of energy produced, transmitted, or delivered; reductions in the volume of energy implies a reduction in profits
- utilities may engage in DSM only to keep regulators happy and may discontinue DSM if regulatory requirements are relaxed
- trade allies can use DSM as a business strategy
- ESCOs' ability to sell DSM depends on their abilities to attract investors which, in turn, depends on how high (or low) electric rates are
- in a competitive environment, DSM may be most profitable (to suppliers of DSM) only when the consumer uses large amounts of electricity
- ESCOs tend to target only larger commercial and industrial consumers, not smaller consumers or residential consumers
- DSM is often offered as part of a package of ESCO services (e.g. plant maintenance services)
- ESCOs may or may not wish to work with utilities in a competitive environment
- if regulators require the provision of DSM by utilities, utilities may be at a cost disadvantage (relative to other suppliers of energy who do not offer DSM services) because of the costs of the DSM programs
- energy supplier business strategies may focus only on the short term, thereby overlooking the long term benefits of DSM

RENEWABLES[1] ISSUES

RENEWABLES AS A RESOURCE: Why promote renewables?

- manufacturing economies of scale will bring down future prices
- buying renewables "pays for fuel costs up front"
- renewables can replace other energy sources
- inclusion of environmental externalities in planning will reflect some of the advantages of some renewables
- central station generation resource (peaking, intermediate resources) -- some technologies not currently cost effective
- distributed generation resource (for end user, or to augment the transmission or distribution system, or to delay the need to upgrade the T & D system)
  - currently cost effective niche applications (e.g. remote water pumping, bus stop lighting, park lighting)
- environmental resource (possibly with less environmental damage that conventional generation resources)
- as a hedge against fuel price uncertainty
- some renewables are modular resources whose capacity can be increased slowly or rapidly as needed
- effect of renewables on power quality (e.g. voltage support)
- renewable technologies may evolve rapidly, leaving some projects with out-of-date technology; however, modularity of some technologies may offset this disadvantage

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[1] **Renewables are defined to be "... resources that continuously can be replenished in the course of natural events within the limits of human time" (Soil Conservation Society of America, *Resource Conservation Glossary*, 3rd edition, Ankeny, Iowa, 1982). Common forms of renewable energy technologies are:**

- **biomass consisting of wood, wood waste, agricultural waste, municipal solid waste, and landfill and digester gas,**
- **geothermal resources, including hydrothermal resources and hot dry rock**
- **hydropower**
- **photovoltaics powered by sunlight**
- **solar thermal resources (e.g. central receivers, dish Stirling generators)**
- **windpower**

APPENDIX: PERSONS ATTENDING TASK FORCE MEETING, FEBRUARY 28, 1995

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PROVISION OF RENEWABLES IN A COMPETITIVE ENVIRONMENT

- Renewables could be provided by any part of a restructured electric utility industry: GENCOs, TRANSCOs, DISCOs, etc.
- utilities will likely offer those renewables that are in their best interest
- what incentives would utilities have to invest in renewables?
- sale of Power Marketing Authorities could help fund renewables programs

MARKETING OF RENEWABLES

- customer may not see benefits of renewables in short run
- customer may not see benefits of renewables if the renewables are sited only at central station plants
- "green pricing" can be used to promote distributed renewables to market segments demanding (and willing to pay for) cleaner power supplies
- utilities may market renewables outside their service territories

IMPLEMENTATION STRATEGIES FOR RENEWABLES

- three ways to consider renewables: as generators, as DSM resources, or as customer services
- renewables must be attractive investments for manufacturers & system integrators
- some renewables, as central station generators, can't compete on price only
  - renewables offer values that are not related to generation of electricity
  - we must find ways to calculate the non-traditional values that renewables provide
  - examples of these values are in the results of a study of the Kerman, CA PV system, which includes values for externalities, reliability, loss savings, equipment replacement and maintenance deferral, transmission capacity deferral, and power plant dispatch savings
- education/information needed so suppliers, electricity generators, transmitters, distributors, and end users all understand appropriate applications and equipment
- certification/standardization may be needed to reduce performance risk of renewables
- requires *long run* view because of need to develop/commercialize some renewables and because of high capital costs of some renewables (offset by low operating costs)
- long term commitment to R&D may be needed to identify and improve applications and performance, and to help lower costs
  - but funding for R&D may be eliminated before costs fall
  - is government needed to undertake research and development and to take long run view?
- encouragement of economies of scale in manufacturing to lower costs

- participation in EPA and other government programs to promote renewables; cost sharing with government agencies
- potential for creating projects with high stranded costs (similar to "PURPA machines" encouraged by high buyback rates)
- blend renewables with cheap government hydropower to encourage development of renewables
- renewables are more attractive if utilities have less stranded investment as a result of retail wheeling
- set asides for renewables
- tax incentives
- renewable power could be wheeled into Arizona from states with good renewable resources (wind, geothermal, biomass, etc.)

SUMMARY OF

THE ENERGY EFFICIENCY AND ENVIRONMENT TASK FORCE MEETING

(Working Group on Retail Electric Competition)

FEBRUARY 28, 1995

Docket No. U-0000-94-165

Utilities Division
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007

DRAFT

SUMMARY OF

THE ENERGY EFFICIENCY AND ENVIRONMENT TASK FORCE MEETING

FEBRUARY 28, 1995

WORKING GROUP ON RETAIL ELECTRIC COMPETITION

The Working Group on Retail Electric Competition held its initial meeting on January 25, 1995. The Working Group was subdivided into three separate Task Forces in order to more effectively address the wide variety of issues that relate to retail electric competition. These three Task Forces are: Regulatory, Systems & Markets, and Energy Efficiency & Environment.

The work of the Energy Efficiency and Environment Task Force was divided into four general subject categories:

1. DSM/Energy Efficiency
2. Renewable Energy
3. Environment/Externalities
4. Integrated Resource Planning

On February 28, 1995, the Energy Efficiency and Environment Task Force held its first meeting at the Corporation Commission. The Commission Staff coordinated the meeting. The appendix lists the participants in the meeting. The first meeting was devoted to discussions of the first two subject categories: DSM/Energy Efficiency and Renewable Energy. The remaining subject areas, Environment/Externalities and Integrated Resource Planning, are scheduled for future meetings of the Task Force.

At the meeting on February 28, the following questions were used as a framework to elicit brainstorming responses:

- Which issues related to DSM (Renewables) are important?
- What would the future for DSM (Renewables) look like in a variety of competitive scenarios?
- What problems arise related to DSM (Renewables) in a competitive environment?
- How might DSM (Renewables) be handled under the options to be considered?

The broad-reaching discussion and brainstorming sessions, conducted on February 28, 1995, resulted in over 140 individual ideas and observations. The ideas and observations have been grouped into major areas of concern and interest as follows:

DSM ISSUES

- DSM AS A RESOURCE
- RESPONSIBILITY FOR PROVIDING DSM
- PRICING OF DSM
- IMPLEMENTATION OF DSM
- TRANSACTION COSTS OF PARTICIPATING IN DSM MARKETS
- MARKETING OF DSM IN A COMPETITIVE ENVIRONMENT
- DSM AS A BUSINESS STRATEGY

RENEWABLES ISSUES

- RENEWABLES AS A RESOURCE
- PROVISION OF RENEWABLES IN A COMPETITIVE ENVIRONMENT
- MARKETING OF RENEWABLES
- IMPLEMENTATION STRATEGIES FOR RENEWABLES

The following pages highlight the discussions at the February 28, 1995 meeting of the Energy Efficiency and Environment Task Force.

SUMMARY OF

THE SYSTEMS AND MARKETS TASK FORCE MEETING

(Working Group on Retail Electric Competition)

MARCH 3, 1995

Docket No. U-0000-94-165

Utilities Division
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007

SUMMARY OF TASK FORCE MEETING ON SYSTEMS AND MARKETS MARCH 3, 1995

In January 1995 the Commission conducted its first Working Group meeting on retail electric competition. To review the issues more comprehensively, the Working Group assigned issues to smaller Task Forces. The System and Markets Task Force held its first meeting on March 3, 1995, and this report summarizes the discussion at this meeting. A list of the participants is provided in Attachment 1.

The major values affected by a restructured market were identified at the January 1995 competition workshop. They are economic efficiency; fairness of electric rates, terms, and conditions; reliability of supply; stability of the investment environment; safety; maintenance and creation of jobs; and the protection of environmental quality. The broad purpose of the Systems and Markets Task Force is to identify how various types of market structures might affect these values.

In particular, the objectives of the System and Markets Task Force are to describe the types of systems and markets that might evolve in different regulatory environments, to explore relevant implementation issues, and to identify the advantages and disadvantages of each market structure. The initial meeting focused on identifying the different types of system operational paradigms and practical issues of implementing the different methods of system operation.

How the market is ultimately structured will depend upon whether retail competition is sanctioned by regulators and to what extent. Three types of regulatory frameworks were considered: encourage retail competition, allow retail competition in limited market segments, or discourage retail wheeling but encourage efficiency and wholesale competition.

Operational Models When Retail Competition is Encouraged

Assuming Utilities Remain Vertically Integrated

The market is described as one in which electricity generation is competitive, but transmission and distribution systems are not competitive. Some aspects of the transmission and distribution system may be regulated in some way other than a monopoly service. The group identified the following types of markets which might function in this environment.

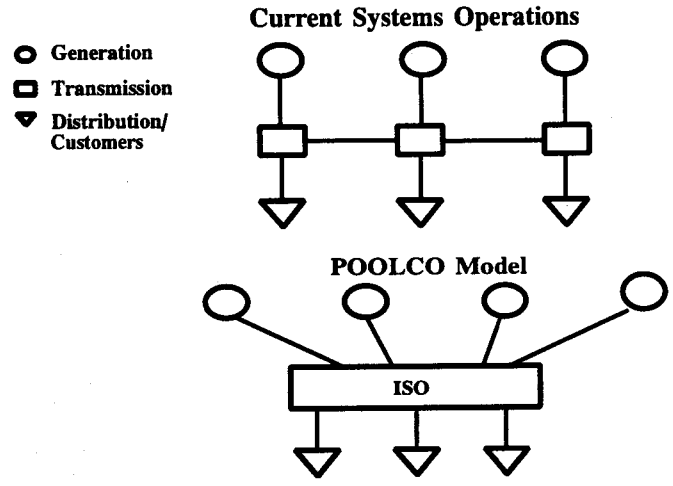
1. **A Bilateral Contracts Model.** Under this scenario, energy portfolio managers would act as full service providers utilizing current system operating procedures, or individual customers may act in their own behalf. New hardware and software technologies may be required to facilitate transactions. For example, new metering technologies may be required to match capacity supplies with customer needs. Also, voltage support, spinning reserve, and other reliability assurance measures may be provided through independent companies that sell reliability services.

2. **A Flexible POOLCO Model.** A regulated independent system operator (ISO), or POOLCO, coordinates power production by generators and coordinates sales to users at a market clearing price. The flexible POOLCO allows for bilateral transactions and spot market options on POOLCO prices. Because of the potential for monopoly control of transmission and distribution access and pricing, transmission and distribution would have to be regulated.

3. **An Exclusive POOLCO Model.** A regulated ISO controls all power transactions, where all generators sell to the ISO and all purchasers buy from the ISO. Alternatively, all generators and purchasers present offers to the ISO and the ISO acts as an auctioneer. Transmission and distribution services would probably be regulated to limit monopoly abuses.

To facilitate the discussion, a few group members illustrated these concepts with diagrams, which are reproduced in Box 1. The diagrams illustrate how transactions could be made using current methods of operation or using a POOLCO model. Utilizing the current system, a customer could purchase power from the generator of choice and arrange for transmission and distribution. Alternatively, a full service provider could maintain a portfolio of generators and optimize the power purchase objectives of their clients. Transmission and distribution service also would have to be arranged.

Box 1: Operational Models



Under a POOLCO model, generators present offers to the ISO and purchases are made by consumers or energy portfolio managers at the market clearing price. The POOLCO diagram pertains to an exclusive POOLCO. However group members indicated that bilateral contracts could occur outside of the ISO, implying that the POOLCO could also be flexible.

Assuming Utilities Divest Generation and Possibly Transmission Facilities

The market becomes segmented by function and generation companies are expected to operate in a competitive environment. The following market sectors may develop.

POOLCO: As previously described, the POOLCO is a regulated independent system operator that forms a spot market for short-term dispatch and coordinates power deliveries. The POOLCO may allow generators and consumers to execute bilateral contracts.

GENCO: Generating companies that construct, operate, and maintain power plants.

TRANSCO: Companies that construct, operate, and maintain transmission systems.

DISCO: Companies that construct, operate, and maintain the distribution wires.

RETAILCO: Retail companies that provide electricity and energy services to customers.

Operational Models When Limited Retail Competition is Allowed

In an environment that limits competition and, thus, access to the transmission system, several task force members agreed that similar paradigms (Bilateral contracts and POOLCO models) would emerge but they would reflect access constraints. For example, energy portfolio managers would operate in open access segments, and POOLCO participation would be limited to those that qualify for access. Extensive metering probably would not be required and voltage control may remain each utility's responsibility.

Operational Model When Retail Competition is Discouraged

POOLCOs and full service providers would not enter this market. Regulators would adopt mechanisms, such as performance based rates and flexible pricing, to improve production efficiencies and utility competitiveness. These topics will also be addressed by the Regulatory Task Force.

Subcommittee Assignments

The Task Force agreed to subdivide into two subcommittees. Each subcommittee has the same assignment. The agenda and subcommittee assignments are attached.

Attachment 1
Participants in March 3, 1995, Systems and Markets Task Force Meeting

Names	Organization	Phone #
Brian Fellows	Arizona Energy Office	280-1427
Gordon Sloan	Sulphur Springs Valley Electric Cooperative	384-2221
Kent Rhoton	Navopache Electric Cooperative	368-5118
Ken Wofford	Plains Generation & Transmission	(505) 889-7670
Troy Tsosie	Diné Power Authority	871-2133
Joe Eichelberger	Magma Copper Company	229-4217
Alan Propper	Resource Management Inc.	258-0234
Kenneth Bagley	R.W. Beck	957-2888
Cary Deise	Arizona Public Service Co.	250-1232
Charles Reinhold	Arizona Power Pooling Association	962-4266
Phil Sarikas	Intel/Arizona Association of Industries	554-1570
Dale Leavesley	Residential Utility Consumer Office	542-3733
Timothy Berg	Fennemore Craig	257-2421
Wally Kolberg	Southwest Gas Corp.	(702) 876-7367
Mike Rowley	Vision Power Service	898-1841
Mike Raezer	Tucson Electric Power Co.	745-7101
Marty Sedler	Salt River Project	236-4447
John Underhill	Salt River Project	236-3859
Charlie Duckworth	Salt River Project	236-2678
Andy Baardson	Nordic Power	296-0162
Lex Smith	Brown & Bain	351-8105
Jacque Moore	Arizona Community Action Association	230-8267
Choi Lee	Phelps Dodge	234-8305
Joe Carl	IBEW Local 1116	792-1475
Bill Turner	IBEW Local 570	622-6745
Dan Austin	Electric Clearing House	852-0512
Barbara Klemstine	Arizona Public Service Co.	250-2031
Vicki Sandler	Arizona Public Service Co.	

APPENDIX: PERSONS ATTENDING TASK FORCE MEETING, MARCH 8, 1995

Organization	Name	Phone No.
Sulphur Springs Valley Electric Cooperative	Rick Eskue	(520) 384-2221
Plains Electric	Mark Reedy	(505) 889-7320
Southwest Gas Corp.	Brooks Congdon	(702) 364-3313
Residential Utility Consumer Office	Walt Hoolhorst	542-3733
Energy Strategies, Inc.	Rick Anderson	(801) 355-4365
Navopache Electric Cooperative	Kent Rhoton, Paul O'Dair	(520) 368-5118
Fennemore Craig	Webb Crockett	257-5333
Neidlinger & Associates	Dan Neidlinger	258-2343
City of Mesa	Darrel Pichoff	644-2265
Citizens Utilities Co.	Kim Kiener	(520) 692-2787
Salt River Project	Diane Evans	236-5536
Arizona Utility Investors Association	Bill Meek, TJ Taub	230-0428
Arizona Electric Power Cooperative	Patricia Cooper	(520) 586-5104
	Irena Callahan	(520) 586-5129
Arizona Dept. of Commerce	Stephen Ahearn	280-1423
Brown & Bain	Lex Smith	351-8105
Phelps Dodge	Choi Lee	234-8305
Tucson Electric Power Co.	Steve Glaser	884-3601
Cyprus Climax Metals Co.	Mike McElrath	929-4507
Trico Electric Cooperative	Marv Athey	744-2944
Arizona Community Action Association	Jeff Schlegel (consultant to ACAA)	(520) 797-4392
	Betty Pruitt	230-8267
Douglas C. Nelson PC	Doug Nelson	230-7771
R.W. Beck	Ken Bagley	957-2888
RMI	Alan Propper	258-0234
Arizona Public Service Co.	Gary Volkenant	250-2635
	Barbara Klemstine	250-2031
	Herbert Zinn	250-3648
	Tom Broderick	250-2584
Snell & Wilmer	Steve Wheeler	382-6327

Table 2. SOCIETAL IMPACTS OF STRANDED INVESTMENT

Options	Values		
	Economic Efficiency	Consumer Responsibility for Prudent Capacity	Other
Utility writes off or writes down assets or Utility sells assets at market value	price of electricity should tend toward marginal cost, increasing efficiency of energy/power choices; introduction of retail wheeling creates new risk that may affect cost of capital	perception that bypassers are avoiding payments for previous investments to serve them	insolvent/bankrupt utility may not be able to serve rural areas & no other suppliers may enter market
Utility recovers s.i. thru re-entry or exit fees	price of electricity > marginal cost leading to inefficient energy/power choices	as a group, beneficiaries of past investments pay for those investments;	
Utility recovers s.i. thru transmission charges	price of electricity > marginal cost leading to inefficient energy/power choices	as a group, beneficiaries of past investments pay for those investments; however, these options may reallocate costs more heavily on low income consumers and on remaining utility customers; other users may also pay for s.i. in wheeling charges	
Utility recovers s.i. thru distribution charges			
Utility transfers s.i. to transmission co. & transmission co. recovers s.i. thru its charges			
Utility recovers s.i. thru rates to its customers	price of electricity > marginal cost leading to inefficient energy/power choices	perception that bypassing consumers are avoiding payments for previous investments to serve them; these options may reallocate costs more heavily on low income consumers	could exacerbate attempts at bypass
Utility charges pre-exit fee on all customers before s.i. experienced			
Utility offsets s.i. thru sales of new services or sales to new customers	price of electricity should tend toward marginal cost, increasing efficiency of energy/power choices	perception that consumers are avoiding payments for previous investments to serve them	
Mixture of options	effect of impacts depends on the mixture of options selected		

Table 1. WHO BEARS THE COSTS OF STRANDED INVESTMENT?

Options	Who Bears Cost of Stranded Investment?			
	Utility/ Investors	Utility Ratepayers	Bypassing Consumers	Others
Utility writes off or writes down assets	share values diminish; for coops U.S. govt loans may not be repaid as quickly	higher cost of capital due to greater riskiness of utility business		property tax payments could decline
Utility sells assets at market value	same as above	same as above		same as above
Utility recovers s.i. thru re-entry or exit fees			raises effective electricity price of bypasser	
Utility recovers s.i. thru transmission charges		all consumers of electricity pay for stranded investment (if transmission service used)		seller may absorb some of charges to make sale
Utility recovers s.i. thru distribution charges		all consumers of electricity pay for stranded investment (if distribution service used)		
Utility transfers s.i. to transmission co. & transmission co. recovers s.i. thru its charges		all consumers of electricity pay for stranded investment (if transmission service used)		other users may also pay for s.i. in wheeling charges
Utility recovers s.i. thru rates to its customers		ratepayers pay for s.i., but higher rates may exacerbate attempts at bypass	more consumers bypass utility	
Utility charges pre-exit fee on all customers before s.i. experienced		ratepayers pay for s.i., but higher rates may exacerbate attempts at bypass	more consumers bypass utility	
Utility offsets s.i. through sales of new services or sales to new customers	may mitigate or offset impact on investors	possibly higher risk to utility & higher cost of capital		property tax payments could decline
Mixture of options	distribution of impacts depends on the mixture of options selected			

intervention.

Among the actions which the Commission might take to reduce transaction costs are:

- Educating consumers about the elements of electric energy services and factors affecting transaction costs.

- Developing optional standardized contracts for small consumers which would leave prices open to negotiation but could have a menu of options and clear delineation of buyers' and sellers' responsibilities regarding quality of service and price and performance expectations. Such contracts may be useful, but some members of the Task Force expect that small consumers would not bother to read or evaluate the contracts. Further, some Task Force members argued that standardized contracts will quickly evolve in the marketplace, anyway, to reduce transaction costs.

- Licensing and regulating suppliers to ensure consumer protection, especially residential and smaller commercial and industrial consumers.

- Resolving disputes between buyers and sellers. Disputes could arise from possibly misleading sales offers,[3] from situations in which the consumer's pattern of demand varies from the pattern assumed at the time the contract was written, and from situations which are not addressed in the contract. The role of the Commission may be limited because buyers and sellers could be located in different jurisdictions.[4] Further, if there are numerous disputes, the Commission could be overwhelmed by the volume of activity.

[3] For example, in competitive telecommunications markets, some providers engage in "slamming" in which the consumer's long distance provider is changed without the consumer's knowledge or consent. One Task Force member proposed that a similar strategy in electricity could be called "shocking."

[4] Contracts could specify the jurisdiction where disputes would be resolved.

Susan Woodward[2] as the costs of :

- finding suppliers or customers
- inspecting goods
- seeking agreeable terms
- writing exchange agreements
- making contracts enforceable
- taking precautions against potential expropriation of the value of investments relying on contractual performance
- monitoring, administering, & enforcing contractual terms

With regard to retail electric competition (including retail wheeling, self generation, and other distributed energy resources), typical causes of transaction costs, for both buyers and sellers, could be:

- the costs of determining the market prices
- the costs of consumer protection from misunderstandings or fraudulent practices
- the costs of protecting sellers from undue liability
- the costs of learning about the unbundled elements of electricity supply
- the costs of managing power quality (such as interruptions or voltage fluctuations)
- the costs of developing contractual arrangements to manage uncertainties about future fuel, operating, maintenance, and capital costs of providing electric energy services
- the costs of developing contractual arrangements to mange the risks of price instability
- the costs of developing and enforcing performance expectations (such as reliability of supplies or impacts of consumer operational fluctuations)
- the costs of obtaining regulatory approvals
- the costs of managing different regulatory or contractual obligations in different jurisdictions

High transaction costs (relative to the benefit of electric energy services) may prevent residential and smaller commercial and industrial consumers from participating in a competitive market for electricity. Thus, there may be a benefit to endeavoring to reduce transaction costs. The Task Force discussed possible roles for regulators in helping to reduce transaction costs, especially in the beginning of a transition to full competition when consumers are likely to be confused. However, market forces may be able to reduce transaction costs without regulatory

[2] "The Firm is Dead; Long Live the Firm," *Journal of Economic Literature*, March 1988, pp. 66-67.

- Estimates can be made of the magnitude of stranded investment in Arizona, but those estimates will reflect the underlying assumptions used in the forecast.

- Errors in estimates of stranded investment can have a major impact on parties responsible for paying for that stranded investment and on the utility.

- The magnitude of stranded investment is expected to change over time as conditions, such as those listed above, change.

- For regulatory purposes, the magnitude of stranded investment could be either forecast once at the time retail wheeling is introduced or revised on a regular basis taking into account market developments.

- If utilities sell some assets at market value, the market value will reflect stranded investment due to expected or actual regulatory changes pertaining to retail wheeling and will reflect other causes of stranded investment, if any, as well as factors that would increase the asset value above book value.

- The concept of stranded investment (due to regulatory changes pertaining to retail wheeling) applies to the entire utility system and the magnitude of stranded investment cannot be inferred from the market value of only some assets.

- If regulators require that utilities divest themselves of generating assets simultaneously, the market value of generation assets could be depressed because of a temporary glut of supply resources being sold.

- Utilities may offset stranded investment through increased sales in a competitive environment, through introduction of new services, and through general growth in the regional economy.

The Task Force considered several options for dealing with stranded investment and identified the parties who would likely bear the costs of stranded investment under each option (Table 1). In addition, the Task Force identified the societal impacts of the treatment of stranded investment (Table 2).

TRANSACTION COSTS

Transaction costs are the costs of participating in the market, i.e. the costs of gathering and processing information on price and quality, and the costs of managing price and performance risks. Elements of transaction costs have been described by Armen Alchian and

investment." Scott Hempling, Kenneth Rose, and Robert Burns, *The Regulatory Treatment of Embedded Costs Exceeding Market Prices: Transition to a Competitive Electric Generation Market*, prepared for the National Association of Regulatory Utility Commissioners, November 1994. p. 5.

Individual Task Force members emphasized several features of stranded investment:

- The stranded investment of interest is the difference in the present value of the net revenue streams with and without a change in regulation allowing retail wheeling; other forms of stranded investments may also occur as part of a utility's normal business risk under traditional regulation.

- Regulatory assets such as deferrals of costs allowed by regulators can be stranded as a result of allowing retail wheeling.

- For the purposes of this investigation, stranded investment applies only to prudently incurred costs.

- There may also exist "stranded benefits" as a result of a change in regulation allowing retail wheeling such as opportunity costs of not continuing utility demand side management programs; these kinds of stranded benefits are not stranded investments.

MAGNITUDE OF STRANDED INVESTMENT

The major points raised regarding the magnitude of stranded investment were:

- The consensus of opinion today is that introduction of retail wheeling in Arizona will result in stranded investment; theoretically, stranded investment could be negative indicating that the market value of utility assets would increase if retail wheeling is introduced.

- The magnitude of stranded investment is unknown; it will depend on such factors as fuel prices, when independent power producers enter the Arizona market, the nature and timing of retail wheeling, and the period over which existing utility facilities are depreciated.[1]

[1] McCullough and Brown suggest that altering depreciation schedules can lower utility costs and hence reduce the magnitude of stranded investment: Robert McCullough and Ruben Brown, "Electric Industry Restructuring: The Effect on Rates Nationwide," *Fortnightly*, July 15, 1994: 20-25.

SUMMARY OF REGULATORY TASK FORCE MEETING

MARCH 8, 1995

WORKING GROUP ON RETAIL ELECTRIC COMPETITION

In the January 25, 1995 meeting of the Working Group on retail electric competition, the working group was divided into three Task Forces to better focus on specific issues related to retail electric competition. The Regulatory Task Force was formed to address stranded investment, alternative rate regulation, the utility's obligation to serve, transaction costs of participating in the market, dispute resolution, legal and jurisdictional matters, and related issues. On March 8, 1995, the Regulatory Task Force held its first meeting at the Corporation Commission. Staff coordinated the meeting. The appendix lists the participants in the meeting. In addition, Commissioner Marcia Weeks attended the meeting.

The first meeting was devoted to discussions of stranded investment, transaction costs, and dispute resolution. The discussions are summarized in the following sections. The Task Force also set up a subcommittee to address legal issues. That subcommittee tentatively set its first meeting for March 29, 1995.

The Staff will draft an agenda for the next Regulatory Task Force meeting and will schedule a date for that meeting.

DEFINITIONS OF STRANDED INVESTMENT

Several definitions of stranded investment were discussed:

1) "Utility plant not used in the provision of utility service due to technological obsolescence or market changes" *P.U.R. Glossary for Utility Management*, 1992.

2) "...Investment in generation, transmission, or distribution facilities whose market value is less than the net book value of those facilities (i.e. less than the cost of the facilities minus accumulated depreciation)." *Staff Report on the Retail Electric Competition Workshop*, October 1994, p. 10.

3) "Where a customer has a legal obligation to bear certain costs, and finds a way to avoid that obligation, the costs are truly 'stranded.' 'Stranded' cost, therefore, results not merely from costs exceeding market, but from customers leaving without paying costs incurred on their behalf. Put another way, the term 'stranded' should apply only where there is a violation of a *quid pro quo*. There is a violation of a *quid pro quo* where (a) the utility was compelled (by contract or franchise) to make an investment and (b) a customer for whom the investment was intended avoids its cost responsibility for that

SUMMARY OF

THE REGULATORY TASK FORCE MEETING

(Working Group on Retail Electric Competition)

MARCH 8, 1995

Docket No. U-0000-94-165

Utilities Division
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007

DRAFT

TABLE 7, Continued
CHARACTERISTICS OF THE MODEL: CASE 3

Retail Competition is Discouraged **Regulatory Incentives Model**
Advantages:
Disadvantages:
Other Comments:

TABLE 7
CHARACTERISTICS OF THE MODEL: CASE 3

Retail Competition is Discouraged	
Major Functions	**Regulatory Incentives Model Characteristics**
System Operation	
Power Pricing	
Settling Imbalances	
Generation Construction & Operation	
Transmission Construction, Operation, & Access	
Transmission Pricing	
System Reliability	
Retailing	
Other	

TABLE 6, Continued
CHARACTERISTICS OF THE MODEL: CASE 2-B

Limited Retail Competition is Allowed **POOLCO Model**
Advantages:
Disadvantages:
Other Comments:

TABLE 6
CHARACTERISTICS OF THE MODEL: CASE 2-B

Limited Retail Competition is Allowed	
Major Functions	**POOLCO Model Characteristics**
System Operation	
Power Pricing	
Settling Imbalances	
Generation Construction & Operation	
Transmission Construction, Operation, & Access	
Transmission Pricing	
System Reliability	
Retailing	
Other	

TABLE 5, Continued
CHARACTERISTICS OF THE MODEL: CASE 2-A

Limited Retail Competition is Allowed **Bilateral Contracts Model**
Advantages:
Disadvantages:
Other Comments:

TABLE 5
CHARACTERISTICS OF THE MODEL: CASE 2-A

Limited Retail Competition is Allowed	
Major Functions	**Bilateral Contracts Model Characteristics**
System Operation	
Power Pricing	
Settling Imbalances	
Generation Construction & Operation	
Transmission Construction, Operation, & Access	
Transmission Pricing	
System Reliability	
Retailing	
Other	

TABLE 4, Continued
CHARACTERISTICS OF THE MODEL: CASE 1-D

Retail Competition is Encouraged **Divested Utility Model**
Advantages:
Disadvantages:
Other Comments:

TABLE 4
CHARACTERISTICS OF THE MODEL: CASE 1-D

Retail Competition is Encouraged	
Major Functions	**Divested Utility Model Characteristics**
System Operation	
Power Pricing	
Settling Imbalances	
Generation Construction & Operation	
Transmission Construction, Operation, & Access	
Transmission Pricing	
System Reliability	
Retailing	
Other	

TABLE 3, Continued
CHARACTERISTICS OF THE MODEL: CASE 1-C

Retail Competition is Encouraged, Utilities Remain Vertically Integrated Exclusive POOLCO Model
Advantages:
Disadvantages:
Other Comments:

TABLE 3
CHARACTERISTICS OF THE MODEL: CASE 1-C

Retail Competition is Encouraged, Utilities Remain Vertically Integrated	
Major Functions	**Exclusive POOLCO Model Characteristics**
System Operation	
Power Pricing	
Settling Imbalances	
Generation Construction & Operation	
Transmission Construction, Operation, & Access	
Transmission Pricing	
System Reliability	
Retailing	
Other	

TABLE 2, Continued
CHARACTERISTICS OF THE MODEL: CASE 1-B

Retail Competition is Encouraged, Utilities Remain Vertically Integrated Flexible POOLCO Model
Advantages:
Disadvantages:
Other Comments:

TABLE 2
CHARACTERISTICS OF THE MODEL: CASE 1-B

Retail Competition is Encouraged, Utilities Remain Vertically Integrated	
Major Functions	**Flexible POOLCO Model Characteristics**
System Operation	
Power Pricing	
Settling Imbalances	
Generation Construction & Operation	
Transmission Construction, Operation, & Access	
Transmission Pricing	
System Reliability	
Retailing	
Other	

TABLE 1, Continued
CHARACTERISTICS OF THE MODEL: CASE 1-A

Retail Competition is Encouraged, Utilities Remain Vertically Integrated **Bilateral Contracts Model**
Advantages:
Disadvantages:
Other Comments:

TABLE 1
CHARACTERISTICS OF THE MODEL: CASE 1-A

Retail Competition is Encouraged, Utilities Remain Vertically Integrated	
Major Functions	**Bilateral Contracts Model Characteristics**
System Operation	
Power Pricing	
Settling Imbalances	
Generation Construction and Operation	
Transmission Construction, Operation, & Access	
Transmission Pricing	
System Reliability	
Retailing	
Other	

AGENDA AND ASSIGNMENT
SYSTEMS AND MARKETS TASK FORCE SUBCOMMITTEE MEETINGS
APRIL 3, 1995

Arizona Public Service Company, 3rd Floor
400 North Fifth Street, Phoenix

AGENDA

9:00-9:15	All committee members: meet in the Camelview Room at APS to discuss agenda and assignment.
9:15-12:00	Subcommittees break out into two groups and work through assignment -- see attached list to determine your subcommittee. New participants will be randomly assigned to a subcommittee.
12:00-1:00	Lunch on your own.
1:00-2:15	Complete subcommittee assignment and prepare summary.
2:30-4:30	All committee members: meet in the Camelview Room for presentation of summaries and discussion.

ASSIGNMENT

Complete Tables 1-7 titled "Characteristics of the Model." To complete the tables, fill in blank rows of the column titled "Model Characteristics" with key features that describe how major functions of the model would be implemented. On the reverse side of each page, list the advantages and disadvantages of each model. The tables should provide general descriptions for each of the following operational paradigms:

Retail Competition is Encouraged

Table 1, Case 1-A:	Utilities Remain Vertically Integrated, Bilateral Contracts Model
Table 2, Case 1-B:	Utilities Remain Vertically Integrated, Flexible POOLCO Model
Table 3, Case 1-C:	Utilities Remain Vertically Integrated, Exclusive POOLCO Model
Table 4, Case 1-D:	Divested Utility Model

Limited Retail Competition is Allowed

Table 5, Case 2-A:	Bilateral Contracts Model
Table 6, Case 2-B:	POOLCO Model

Retail Competition is Discouraged

Table 7, Case 3:	Regulatory Incentives Model

SYSTEMS AND MARKETS TASK FORCE SUBCOMMITTEES
ASSIGNMENT OF MEMBERS

Subcommittee A	Subcommittee B
Alan Propper	John Underhill
Cary Deise	Mike Rowley
Phil Sarikas	Choi Lee
Lex Smith	Bill Turner
Joe Carl	Barbara Klemstine
Dan Austin	Vicki Sandler
Charlie Duckworth	Andy Baardson
Mike Raezer	Marty Sedler
Dale Leavesley	Timothy Berg
Charles Reinhold	Kenneth Bagley
Troy Tsosie	Joe Eichelberger
Ken Wofford	Kent Rhoton
Brian Fellows	Gordon Sloan
Wally Kolberg	Jacque Moore
Prem Bahl	Kim Clark
Ray Williamson	David Berry

Note: Additional participants will be randomly assigned to a subcommittee.